



ARMY MEDICINE
Serving To Heal...Honored To Serve

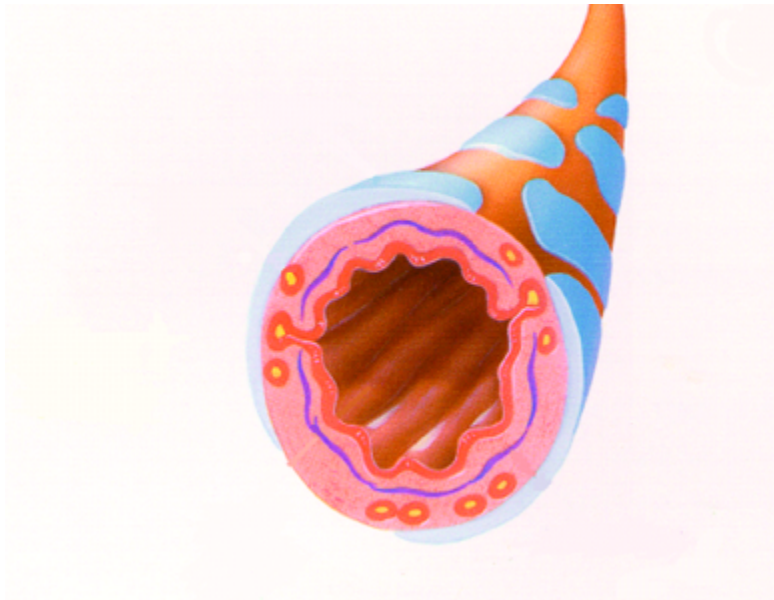
Asthma Clinical Practice Guideline Review

**Division of Population Health
Revised June 2010**

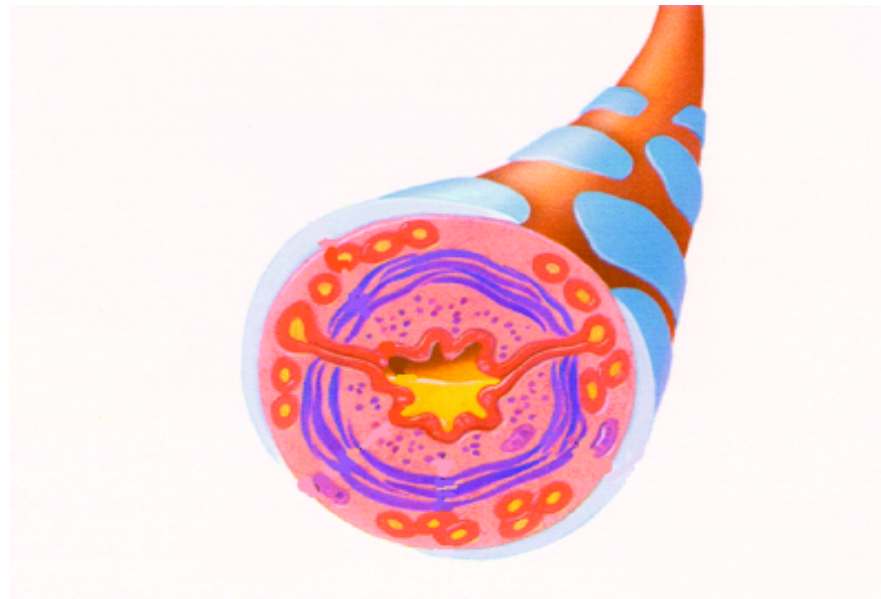


What is Asthma?

- **Chronic disease of the airway :**
 - Obstruction that may or may not be reversible, hyper-responsiveness of the large airway
 - Characterized by exacerbations



Normal Airway



Airway Inflammation



Diagnosis



- **Comprehensive History and Physical:**



- Symptoms (shortness of breath, chest tightness, coughing, wheezing, night time awakenings,..)

- Triggers (dust mites, allergies, exercise, smoke, weather changes,..)

- **Chest X-Ray**

- **Pulmonary Function Test**

- **Code for Symptoms until Diagnosis is made**



Severity Level

	Intermittent	Mild Persistent	Moderate Persistent	Severe Persistent
Symptom Frequency	$\leq 2/\text{week}$	$> 2/\text{week}$	Daily	Continuous
Nocturnal Symptoms	$\leq 2/\text{month}$	$> 2/\text{month}$	$> 1/\text{week}$	Frequent
Peak Flow % of Best	$\geq 80\%$	$\geq 80\%$	50-80%	$\leq 50\%$
Bronchodilator Use	$< 1/\text{week}$	As needed to 2 puffs	$> 4\text{puffs/day}$	$\geq 10\text{puffs/day}$
Definition	"Well controlled"			"Not well controlled"



Additional Considerations for Severity Determination

- **Impairment**

- If symptoms fall in more than 1 category, choose the most severe
- Consider the amount of meds needed for control, not just presenting symptoms (i.e. severe doses=severe asthma)

- **Risk**

- Frequent oral steroid use
- Number of Emergency Department visits or hospitalizations
- Intensive Care Unit admissions/intubation



Indicators of Poor Control

- **Consider stepping up therapy if patient:**
 - Awakens at night with symptoms
 - Has increased or frequent need for reliever
 - Has an exacerbation requiring oral steroids
- **Before increasing medications, check:**
 - Inhaler technique and spacer use
 - Adherence to prescribed regimen
 - Environmental changes
 - Appropriate rule out of alternative diagnoses



Managing Other Factors That Can Influence Asthma Control



- **Rhinitis**- control inflammation; intranasal corticosteroids are the most effective
- **Sinusitis**- promote drainage; antibiotics for complicating acute bacterial infection
- **Gastroesophageal reflux**- medications; no food before bedtime; elevate head of bed
- **Sulfite**- containing foods/beverage- avoidance if sensitive
- **Viral infections**- annual influenza vaccination
- **Aspirin/non-steroidal anti-inflammatory drugs (NSAIDs)**- avoidance if sensitive
- **Non-selective (especially) beta-blockers**- avoidance



Exercise-Induced Bronchospasm (EIB)

- **Definition:** are patients with **established** asthma who, during exercise, have a component of bronchospasm that limits their activities
- **Conduct exercise challenge OR have patient undertake task that provoked the symptoms**
- **15% decrease in PEF or FEV₁ is compatible with EIB**
- **It's reported to occur in up to 80% of asthma patients**
- **Resolves upon cessation of exercise**
- **Also known as exercise-induced asthma (EIA)**



Exercise-Induced Bronchospasm (EIB)

- **History of cough, shortness of breath, chest pain or tightness, wheezing, or endurance problems during exercise**

Management:

- Short-acting inhaled β_2 -agonists used shortly before exercise, last 2 to 3 hours
- A lengthy warm-up period before exercise
- Alternative medication: montelukast
- Consider stepping up to a inhaled corticosteroid as indicated



Exercise-Induced Bronchospasm in the Athlete

- **Definition:** a separate group of patients **who do not** have underlying asthma, but may develop symptomatic bronchospasm with prolonged exercise
- **Patients who exercise on a regular basis**
- **Normal resting spirometry, but airway hyperactivity with bronchoprovocation testing**
- **Only associated with exercise, with no other resting or nocturnal symptoms**



Exercise-Induced Bronchospasm in the Athlete

- Symptoms of dyspnea, cough , wheezing, or chest tightness
- Little indication for controller medication
- Resolves spontaneously after cessation of exercise
- Responds to treatment

Management:

- A gradual warm up period prior to exercise
- Short-acting beta₂-agonists, use 15-20 minutes **before** exercise



Goals of Asthma Therapy

- **Prevent** chronic and troublesome symptoms
- **Prevent** recurrent exacerbations
- **Maintain** (near-) “normal” pulmonary function
- **Maintain** normal activity levels (including exercise and other physical activity)
- **Provide** optimal pharmacotherapy with minimal or no adverse effects
- **Educate** patients and families on realistic expectations for asthma care



Short-Acting Beta₂-Agonists (SABA)

- **Most effective medication for relief of acute bronchospasm**
- **Frequent use suggests inadequate control**
- **Regularly scheduled use is not recommended**
 - May lower effectiveness
 - May increase airway hyper-responsiveness
 - Masks underlying inflammation
 - Confounds severity determination
- **Preferred choice Ventolin® (has dose counter), No clinical advantage of Xopenex®**





Inhaled Corticosteroids (ICS)

- **Most effective long-term control therapy for persistent asthma**
- **Small risk for adverse events at recommended dosage**
- **Reduce potential for adverse events by:**
 - Determining appropriate severity level and
 - Using lowest recommended dose
 - Advocating spacer use and mouth rinsing



Long-Acting Beta₂-Agonists (LABAs)



- **Not a substitute for anti-inflammatory therapy**
- **Not appropriate for mono-therapy in persistent asthma**
- **Beneficial when added to inhaled corticosteroids**
- **Not for acute symptoms or exacerbations**



Combination Steroid & LABA Products



- **For use in stable therapy to enhance compliance**
- **Dry Powder - 1 inhalation 2x/day**
- **HFA MDI - 2 Puffs with spacer 2x/day**
 - *** dosing cannot increase/double*****
- **New FDA Warning:**
 - FDA believes that when LABAs are used appropriately, the benefits of LABAs in improving asthma symptoms outweigh their risks of increasing severe asthma exacerbations and deaths from asthma**



Leukotriene Modifier Montelukast (Singulair®)

- **Uses**

- Seasonal/Perennial allergic rhinitis
- **Alternative** (not preferred) long-term controller therapy
 - Alone for **mild** persistent asthma
 - Added to inhaled steroid for **moderate** persistent asthma
- Exercise-induced bronchoconstriction

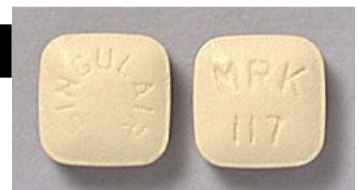
- **Monitoring concerns**

- Possible neuropsychiatric events
- Vigilance for systemic eosinophilia

- **Effective in only 30-50% of patients**

- **Further experience and research needed**

TABLET DAILY
SINGULAIR[™]
(montelukast sodium, MSD)





Systemic Corticosteroids

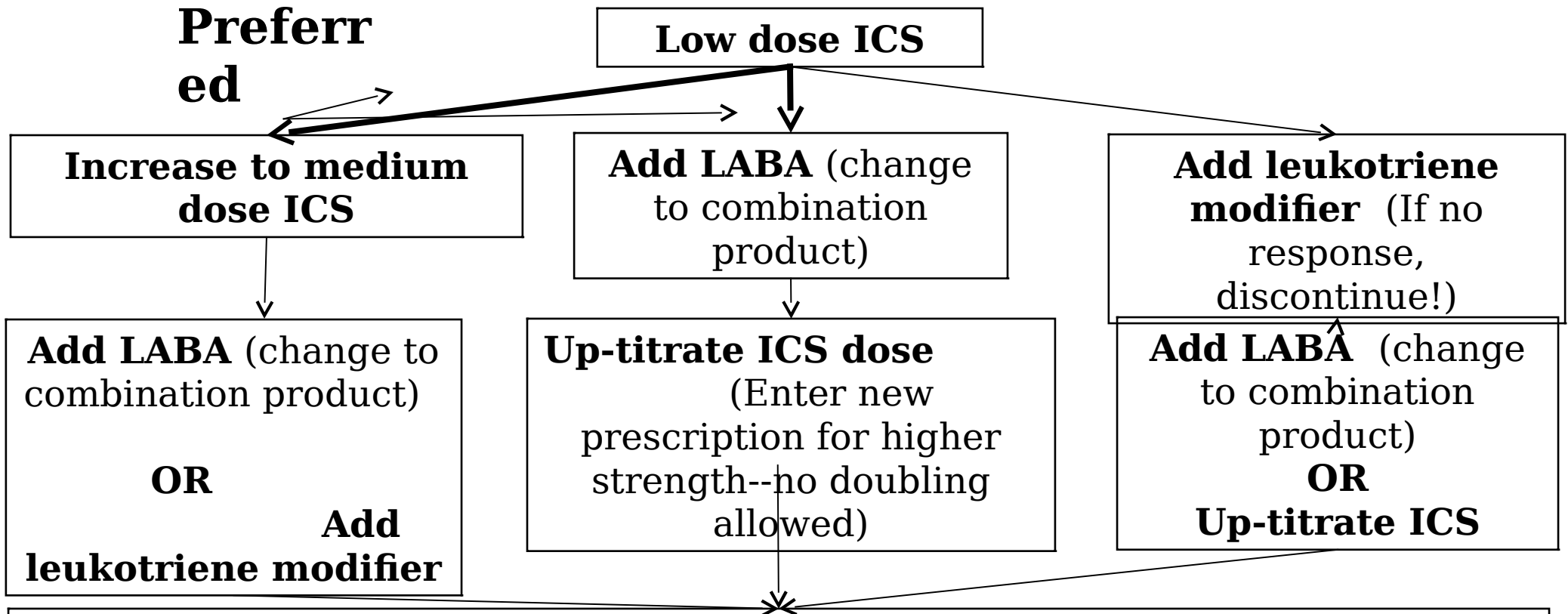
- **Short “bursts” (4-7 days) are effective for establishing control in acute exacerbation**
- **Recommended dosing:**
 - Up to 11 years: 1-2 mg/kg/day
 - 12 years and up: 40-60 mg/day
- **No evidence that tapering the dose is necessary**
- **Prednisone available in tablet form**
- **Prednisolone** (Prelone[®] 15mg/5ml; Orapred ODT[®] 10mg, 15mg, 30mg)
- **Use of Solu-Medrol[®]/Kenolog[®] injection, or Medrol Dose Pak[®], have NO place in treatment**



I started with a low dose ICS but my patient still isn't controlled.

Now what do I do?

Preferred



May continue to up-titrate ICS as needed. If high dose ICS is required, **MUST** refer to specialty care: Allergy **OR**

Pulmonary (not at the same time)!



Management Considerations: Medications

- Evidence shows that MDI with spacer as effective as nebulizer
- **Every patient, regardless of age, should use a spacer every time**
- **Controllers**
 - ICS are mainstay of therapy
 - Others are **secondary/tertiary** agents
- **Opiates, sedatives and tranquilizers should be avoided in the acutely ill**
- **Expectorants and mucolytic agents add little**



Monitoring Lung Function: Peak Flow Monitoring

- **Peak Flow Monitoring**

- Most recent evidence shows that symptom-based plans are

- effective and peak flow monitoring is optional per VA/DoD CPG

- Patient is to maintain a daily diary for 2-3 weeks while symptom

- free to establish their personal best peak flow number

NOT REQUIRED for written asthma action plan development Symptom-based action plans are as useful as those based on peak flow readings



Monitoring Lung Function:

- **Spirometry is recommended**
 - For everyone older than 5 years old
 - At initial assessment
 - At least every 1 to 2 years
- **Refer**
 - Adults – Pulmonary Function Test
 - Children – Pediatric Pulmonary Function Test



Lung function testing options in asthma

- Refer for “Spirometry”
 - The general population
 - Baseline assessment (for diagnosis), after treated and stable, with worsening symptoms and periodically to assess changes
 - Post-bronchodilator study completed **ONLY** if there is evidence of obstruction
- Refer for “Pre/post bronchodilator spirometry”
 - Rarely!
 - ***Outline clinical suspicion and necessity in referral narrative***
 - Improvement is more common in pediatric patients
- Refer for “Full Pulmonary Function Testing (PFT)” when:
 - Previous spirometry with restrictive or mixed pattern
 - Previous normal spirometry with ***description of significant pulmonary symptoms in referral narrative***
 - Significant environmental (usually occupational/deployment-related) exposure to irritants (dust, smoke, chemicals, etc)



Management Considerations: Referrals



- **Consider referral to pulmonary OR all**
 - Diagnosis is unclear/atypical presentation
 - Patient not responding to treatment
 - Other medical problems complicating care
 - Patient history of severe asthma, frequent oral steroid use, history of Intensive Care Unit/intubation admission
 - Patient requires high-dose ICS (step 5)
- **Order PFTs and chest x-ray prior to consult!**



Why A Written Action Plan?

- **Recommended by recent NAEPP guideline¹**

“It is the opinion of the (NHLBI) Expert Panel that all patients should be given a written action plan and be instructed to use it.”

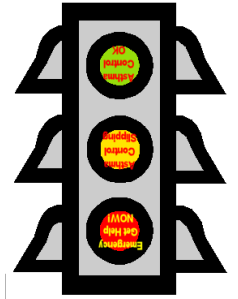
- **Supported by additional literature review²**

- Optimal asthma management includes
 - Patient education for self-management
 - Regular provider review
 - Provision of a written action plan
- Results in fewer Emergency Department visits, hospitalizations, symptoms and rescue inhaler use

1 National Asthma Education and Prevention Program. Expert Panel report 3: guidelines for the diagnosis and management of asthma. Bethesda, MD: National Institutes of Health, November 2007
Gibson PG, Powell H, Coughlan J, Wilson AJ, Abramson M, Haywood P,
2 Bauman A, Hensley MF, Walters EH. Self Management education and regular practitioner review for adults with asthma. Cochrane Database of Systemic Reviews 2002, Issue 3.



Asthma Action Plan



- **A written Asthma Action Plan**

- Guides patient self-management of exacerbations

home

- **Educates patients about**

- Peak flow values (optional)
- Recognition of early signs of worsening asthma
- Prompt communication of decreased responsiveness or duration of reliever
- Changes in medication therapy



That Pesky **Yellow** Zone

- **Intensify Therapy**

- Increase the frequency of (schedule) reliever use
- Consider burst of oral steroids if severe or high-risk
 - only in select patients who understand the purpose and use of this medicine
 - 4-7 day burst with no tapering required
- Instruct patient to call for same day appointment

- **Plan will vary based on patient's triggers, ability to perceive symptoms, and risk of death**



REPORT TITLE

ASTHMA ACTION PLAN

OTSG APPROVED (DATE) -
15 Dec 99

Personal Best: _____

GREEN - "Good To Go"

Breathing Good, No

Cough or Wheeze.

Can work or play,

Sleep through the

night.

Triggers: _____

Trigger Management: _____

Follow-Up Appt (Date/Time): _____

With: _____

Controllers
Use EVERY day to prevent attacks

Dose

Frequency

OPTIONAL

>80% of personal best
Peak Flow

More Than: _____

YELLOW - CAUTION

Signs/Symptoms:

Cough, wheeze, chest
tightness, Shortness of
breath, Wake up at
night.

Add'l Symptoms: _____

Your quick reliever medicine is: _____

Take reliever medicine 20 minutes before exercise.

☐ Remember to use your SPACER with your quick relief medication.

Continue GREEN ZONE medications

Take Reliever 2 puffs every 20 minutes up to one hour or Nebulizer unit dose once

THEN, Recheck Peak Flow/Symptoms:

If still YELLOW

☐ Increase Reliever _____ puffs every _____ hours for _____ days☐ Add _____☐ _____

Provider Recommendations:

OPTIONAL

50-80% of
personal best
Peak Flow:

_____ to _____

☐ Call health care provider for an appointment. Phone #: 254

RED - STOP - DANGER

SIGNS/SYMPTOMS:

Medicine not helping,
can't talk or eat/drink
well, Lips turn blue or
grayTAKE NEBULIZER UNIT DOSE ONCE OR _____ PUFFS OF RELIEVER
MEDICINE EVERY 20 MINUTES X 3 WHILE CALLING 911 OR IN ROUTE
TO THE EMERGENCY ROOM

Provider Recommendations:

OPTIONAL

<50% of personal best
Peak Flow

Less Than: _____

PREPARED BY (Signature & Title)

Upon admission to EMERGENCY Department or Inpatient care Asthma
Action plan is placed on hold.

DEPARTMENT/SERVICE/CLINIC

DATE

5/19/10

PATIENT'S IDENTIFICATION (For a typed or written entries give: Name - last, first,
middle; grade; date; hospital or medical facility)☐ HISTORY/PHYSICAL☐ FLOW CHART☐ OTHER EXAMINATION
OR EVALUATION☒ OTHER (Specify)
Action Plan☐ DIAGNOSTIC STUDIES☐ TREATMENT



Action Plan Options



- **Electronic PDF and EXCEL version (available on the Intranet Department/Services **Blue Button**: Population Health)**
- **Both versions can be pasted into AHLTA Clinical Notes**
- **Written triplicate “hard-copy” with the top sheet sent for scanning per SOP**
- **Asthma Action Plan is required for every patient per Medical Staff Executive Committee!**



Provider and Patient Resources

- **DACH AIR asthma education**

- Available by PCM asthma consult or patients may self-refer
- Age specific group classes
- Individual appointments for special needs

- **Pharmacist-run collaborative practice clinic (adults)**

- Requires PCM referral (AHLTA: asthma)
- Initiation, monitoring and modification of therapy
- Continuous feedback to the referring PCM

***** Patient must already be diagnosed with asthma!



Information



The CPG, algorithm, AAP and other tools can be ordered and/or downloaded from the AMEDD Quality Management web site:

<https://www.qmo.amedd.army.mil/>

For information on the DACH AIR program:

Wanda Gomez RN, AE-C, Asthma Coordinator at 288-8638/8136



CPG TEST QUESTIONS

1. Management of EIB in the Athlete would be:
 - a. Short Acting Beta₂-Agonist 15-20 minutes prior to exercise
 - b. A warm-up period or gradual increase in exercise
 - c. Adding a controller at this time
 - d. a and b
 - e. All the above
2. According to the CPG, montelukast (Singulair®) can be used as mono-therapy in patients with moderate persistent asthma:
 - a. True
 - b. False



CPG TEST QUESTIONS

- 3. A referral for specialty pulmonary care may be considered if :**
- a. Diagnosis is unclear**
 - b. Patient not responding to treatment**
 - c. Other medical problems complicating care**
 - d. Patient with h/o severe asthma, frequent oral steroid use, history of Intensive Care Unit/intubation care**
 - e. All of the above**



CPG TEST QUESTIONS

- 4. Intensify therapy in **Yellow** zone of the asthma action plan by:**
- a. Increasing the frequency of reliever use**
 - b. Consider a burst of oral steroids if severe or high-risk, only for those who understand the purpose and use of this medication**
 - c. Instruct patient to call for same day appointment**
 - d. All of the above**



CPG TEST QUESTIONS

- 5. Consider stepping up therapy if patient:**
- a. Is not having any symptoms with current therapy**
 - b. Has an exacerbation requiring oral steroids**
 - c. Awakens at night with symptoms**
 - d. Has an increase or frequent need of reliever**
 - e. b, c, d**
 - f. All the above**



ARMY MEDICINE

Serving To Heal...Honored To Serve